

## **ATTACHMENT C**

**Route Alternative Analysis & Map for Southern Lights' Manhattan to  
Streator Lateral**

## **Enbridge Route Alternatives Analysis Southern Lights Pipeline (Manhattan, IL to Southern Access Interconnect)**

### **Introduction**

The pipeline routing analysis process is a fundamental early step in a pipeline project. The process is an interdisciplinary analysis that includes the various internal groups in the project team. Analysis of alternatives and ultimately selection of a proposed pipeline route is an iterative process, and involves route refinement that becomes more and more focused as the routing analysis proceeds.

The intent of this report is to summarize the routes which were considered from an existing tank facility near Manhattan, Illinois to an interconnect point with Enbridge's proposed Southern Access route near Streator, Illinois. The document summarizes the high-level route investigation work conducted by the Environmental Department and also documents technical and Right-of-Way (ROW) issues that were considered in evaluating the various route alternatives.

### **Route Selection Approach**

The initial route selection process involved consideration of environmental, technical, and ROW factors. The approach conducted for the non co-located portion of the Southern Lights Project involved a high-level conceptual routing analysis considering various routing options within a general east to west corridor between a tank farm near Manhattan, Illinois to a point of interconnect with the Southern Access pipeline route near Streator, Illinois. A detailed description of the route evaluation criteria is included in Table 1.

### **Route Alternatives**

Initially, the evaluation included co-location within existing pipeline corridors, as well as road rights-of-ways and electrical transmission lines.

Road co-location was deemed an unfavorable alternative and precluded at an early stage in the analysis based on six principal factors:

- lack of any identifiable provision for pipeline co-location under state regulations covering interstate highway use;
- steep sideslopes (embankments or cuts) along many sections of road right-of-way;
- insufficient construction workspace along many sections of road right-of-way;
- safety concern due to the large amount of heavy equipment that would be operating directly adjacent to highway traffic;
- development generally occurs adjacent to roadways, and highways, connect populated areas, which would bring the pipeline facilities closer to developed areas, which is contrary to the desire to site the pipeline facilities in such a way as to minimize exposure to populated areas;
- potential future interference due to ditch maintenance or roadway expansion.

## Proposed Routes Reviewed

The four routes that were identified and evaluated are described below and shown on Figure 1: Southern Lights Project – Proposed Routes in Illinois. A table summarizing the results of this analysis is provided at the end of this discussion.

Route 1: BP 1 Alternative—This route originates at a tank facility on the south side of Manhattan, Illinois, and follows existing pipeline right-of-way to connect with the proposed Southern Access route near Streator, Illinois. The route is approximately 44 miles from start to finish. The entire route encompasses right-of-way that is currently owned and operated by BP Amoco. The location of the route is indicated by the green line on Figure 1.

Route 2: Manhattan to Streator Alternative (Manhattan to Kankakee River via BP-1 : Kankakee River to Streator via Unknown Right-of-Way) - Route 2 begins at the tank facility at Manhattan, Illinois, and follows the BP 1 route south and west for approximately 12 miles. Just east of the Kankakee River, Route 2 joins an existing, continuous pipeline right-of-way of unknown ownership, and continues southwest (roughly parallel to BP 1) to an interconnect with the proposed Southern Access route near Streator, Illinois. The total length of this route is approximately 45 miles. The location of Route 2 is indicated by the purple line on Figure 1.

Route 3: Spearhead Alternative—This route begins at the tank facility at Manhattan, Illinois, and follows existing pipeline right-of-way of unknown ownership south-southwest to existing Enbridge pipeline right-of-way (Spearhead). From there, this route continues southwest to connect with the proposed Southern Access route near the Flanagan tank facility. The total length of this route is approximately 50 miles. The route's configuration is indicated by the blue line on Figure 1.

Route 4: Alliance Alternative—The Alliance Alternative also begins at the tank facility at Manhattan, Illinois. After an approximately 1.7 mile non-collocated "Greenfield" route, the route follows the existing Alliance Pipeline right-of-way west to a connection with the proposed Southern Access route. Enbridge is an owner of the Alliance line. The total length of this route is approximately 39 miles. The route's configuration is indicated by the orange line on Figure 1.

## Route Characterization

### Route 1:

- The orientation of this route is roughly east by northeast to west by southwest.
- The primary land use crossed by the route is cultivated farmland/row crops. Of the approximately 44-mile total length of this route, about 37 miles consist of Prime Farmland.
- Other land uses/land covers encountered include small forested areas associated with riparian buffers and farmsteads; several small wetland areas; road and railroad crossings; and a few instances of the following land uses: commercial/non-transportation, and grassland/pasture.
- The route crosses several creeks and rivers and the inundated low areas in the strip mines northeast of Coal City.

- The route starts in Will County, Illinois, goes through Grundy County, Illinois, and ends in La Salle County, Illinois.

The route appears to be in the vicinity of the following notable public lands. Field surveys would be required to confirm route location with respect to these areas:

- Des Plaines State Fish and Wildlife Area in Will County
- Joliet Ammunition Plant/Midewin National Tallgrass Prairie in Will County

Notable waterbody crossing information:

- Kankakee River in Will County
- Mazon River in Grundy County (listed on the Nationwide Rivers Inventory as potentially eligible for National Wild, Scenic, or Recreational River status)
- Thunder Creek (two crossings) in Grundy County

Other notable features crossed include:

- Strip mine area, northeast of Coal City
- Interstate Highway 55, west of the Kankakee River
- "Old Indian Reservation Boundary" (vicinity Ammunition plant)

The route would be located in or near the following developed areas:

- Coal City in Grundy County
- Manhattan in Will County
- The route also skirts the following small towns: Ransom, Kinsman, Verona, Mazon, and Carbon Hill.

The entire length of Route 1 is collocated with existing right-of-way owned by BP Amoco. In addition, a significant portion of this route (approximately 9 miles total) runs parallel to, and may collocate with, the Atchison Topeka and Santa Fe Railroad.

Overall, Route 1 is in a rural setting devoted primarily to row crop farming/agricultural production. The route avoids crossing state public lands but will be close to a state conservation area and appears to cross a former ammunition plant and national grassland. The crossing of both the Kankakee River and Interstate 55 will likely require the use of HDD technology, as could the crossing of the Mazon River. The presence of the "Old Indian Reservation Boundary" near the former Joliet Ammunition Plant could indicate a higher likelihood for discovery of cultural resources and an increased level of consultation with Native American communities.

## Route 2:

- The orientation of this route is roughly east by northeast to west by southwest.
- The primary land use crossed by the route is cultivated farmland/row crops. Of the approximately 45-mile total length of this route, about 37 miles are Prime Farmland.
- Other land uses/land covers encountered include small forested areas associated with riparian buffers and farmsteads; several small wetland areas; road and railroad crossings; and, to a lesser extent, commercial/non-transportation, and grassland/pasture.
- The route crosses several creeks and rivers and the inundated low areas in the strip mines east of Coal City.
- The route starts in Will County, Illinois, goes through Grundy County, and ends in La Salle County, Illinois.

The route appears to be in the vicinity of the following notable public lands. Field surveys would be required to confirm route location with respect to these areas:

- Des Plaines State Fish and Wildlife Area in Will County
- Joliet Ammunition Plant/Midewin National Tallgrass Prairie in Will County

Notable waterbody crossing information:

- Kankakee River in Will County
- Mazon River in Grundy County (listed on the Nationwide Rivers Inventory as potentially qualifying for National Wild, Scenic, or Recreational River status)
- Johnny Run in Grundy County (listed on the Nationwide Rivers Inventory as potentially qualifying for National Wild, Scenic, or Recreational River status)
- Otter Creek in La Salle County (listed on the Nationwide Rivers Inventory as potentially qualifying for National Wild, Scenic, or Recreational River status)

Other notable features crossed include:

- Interstate Highway 55, west of the Kankakee River
- Strip mine area, east of Coal City
- The route also parallels I-55 for approximately 1 mile while crossing the strip mines

The route would be located in or near the following developed areas:

- Braidwood in Will County
- Coal City in Grundy County

Route 2 is 100% collocated with existing right-of-way. However, the identity and status of the current pipeline owner/operator on the non-BP 1 portion of the route is unknown. The BP 1 portion of the route would have the same collocation issues as mentioned for Route 1 above.

Overall, Route 2 is in a rural setting devoted primarily to row crop farming/agricultural production. The route has been chosen to utilize existing pipeline right-of-way in the area, but in doing so appears to cross two types of public lands (federal and state). The crossing of both the Kankakee River and Interstate 55 would likely require the use of HDD technology, as could the crossings of the Mazon River, Johnny Run, and Otter Creek because of their NRI status.

### Route 3:

- The orientation of Route 3 is roughly northeast to southwest.
- The primary land use crossed by the route is cultivated farmland/row crops. Of the approximately 50-mile total length of this route, about 41 miles are Prime Farmland.
- Other land uses/land covers encountered include small forested areas associated with riparian buffers and farmsteads; several small wetland areas; road and railroad crossings; and rolling hills, draws, and intermittent streams.
- The route crosses several creeks and rivers but no lakes or ponds.
- The route starts in Will County, Illinois, goes through Kankakee County and Grundy County, and ends in, Livingston County, Illinois.

The route appears to cross the following notable public lands:

- Kankakee River State Park on both sides of the Kankakee River in Will County. Due to the presence of other rights-of-way in the area, the state park could be avoided by using another, less direct pipeline right-of-way to connect the Spearhead line to Manhattan, thereby increasing the overall length of this route.

Notable waterbody crossing information:

- Kankakee River in Will County
- Forked Creek in Will County, near a small dam
- Horse Creek in Kankakee County
- East Fork Mazon River in Livingston County

Other notable features crossed include:

- A simultaneous crossing of Interstate Highway 55 and the Illinois Central Gulf Railroad, south of Odell

The route would be located in or near the following developed areas:

- Manhattan in Will County
- Odell in Livingston County

Route 3 is 100% collocated with existing rights-of-way. However, while 71% of the route is owned by Enbridge (Spearhead Pipeline), 14.7 miles (or 29%) of the route consists of right-of-way that is owned by another, unknown entity.

Route 3 is almost exclusively rural, crossing land that is devoted primarily to row crop farming/agricultural production. The route has been chosen to maximize an existing Enbridge-owned pipeline right-of-way from near the Kankakee River to the tank facility near Flanagan (Southern Access interconnect). The crossing of both the Kankakee River and Interstate 55/Illinois Central Gulf RR will likely require the use of HDD technology, as could the crossings of other railroads along the route.

#### Route 4:

- The orientation of Route 4 is roughly east to west.
- The primary land use crossed by the route is cultivated farmland/row crops. Of the approximately 39-mile total length of this route, about 31 miles are Prime Farmland.
- Other land uses/land covers encountered include small forested areas associated with riparian buffers and farmsteads; several small wetland areas; road and railroad crossings; and rolling hills, draws, and intermittent streams.
- The route crosses several creeks and rivers, and may cross other waterbodies.
- The route starts in Will County, Illinois, goes through Grundy County, and ends in La Salle County, Illinois.

The route may cross the following notable public lands:

- Channahon State Park in Will County
- Illinois & Michigan Canal State Trail in Will County
- Illinois & Michigan Canal, a National Heritage Corridor

Notable waterbody crossing information:

- Jackson Creek in Will County
- Des Plaines River in Will County
- Illinois and Michigan Canal in Will County
- Du Page River in Will County
- Aux Sable Creek in Grundy County
- In addition, the route may cross the Minooka gravel pit (with open water) and the Minooka sewage treatment pond in Will County

Other notable features crossed include:

- Interstate Highway 55 east of Channahon
- U.S. Highway 6 in Channahon
- Interstate Highway 80 west of Minooka

The route would be located in or near the following developed areas:

- Manhattan in Will County
- Elwood in Will County
- Channahon in Will County
- Minooka in Grundy County

Almost 96% of Route 4 consists of right-of-way that is co-owned by Enbridge (Alliance Pipeline). The remaining 1.7 miles would be new non-collocated Greenfield development between the existing Alliance right-of-way and the Manhattan tank facility.

Route 4 is mostly rural, crossing land that is devoted primarily to row crop farming/agricultural production. The route also is located near several residential, commercial, and industrial areas, including the Drummond Tank Farm (approximately .5 mile away). The route has been chosen to maximize an existing pipeline right-of-way that is part-owned by Enbridge, and to minimize the distance from the tank facility at Manhattan to the Southern Access interconnect. The crossing of the Des Plaines River, Interstates 55 and 80, U.S. Highway 6, and the Illinois & Michigan Canal would likely require the use of HDD technology, as could the crossings of other

rivers, roads, and railroads along the route. In addition, the Illinois & Michigan Canal is listed by the National Park Service as a National Heritage Corridor.

Based on high level examination of the preliminary routes several features and issues were identified that merit closer field observation. These include:

Route 1:

- The potential HDD crossings of I-55 and the Kankakee River are close together, but likely too far apart to be accomplished with one HDD crossing. Work areas may be consolidated for these two crossings.

Route 1 and 2:

- Previous utility projects in the vicinity of the Joliet Ammunition Plant should be researched for cultural resources issues related to the "Old Indian Reservation Boundary".
- Potential for right-of-way constriction and route refinement in the area near the Joliet Ammunitions Plant/ Midewin National Tallgrass Prairie
- Route refinement may be required to possibility avoid the military reservation and the state fish and wildlife areas.

Route 3 and 4:

- Approximately 5 miles of Route 3 and 2 miles of Route 4 are underlain by shallow bedrock. The extent of this bedrock will need to be explored to determine engineering requirements or the need to amend the chosen route.

All Routes: Multiple existing pipeline and power line rights-of-way will be crossed by these alternatives. These crossings will require negotiations with the current owners and special construction considerations.

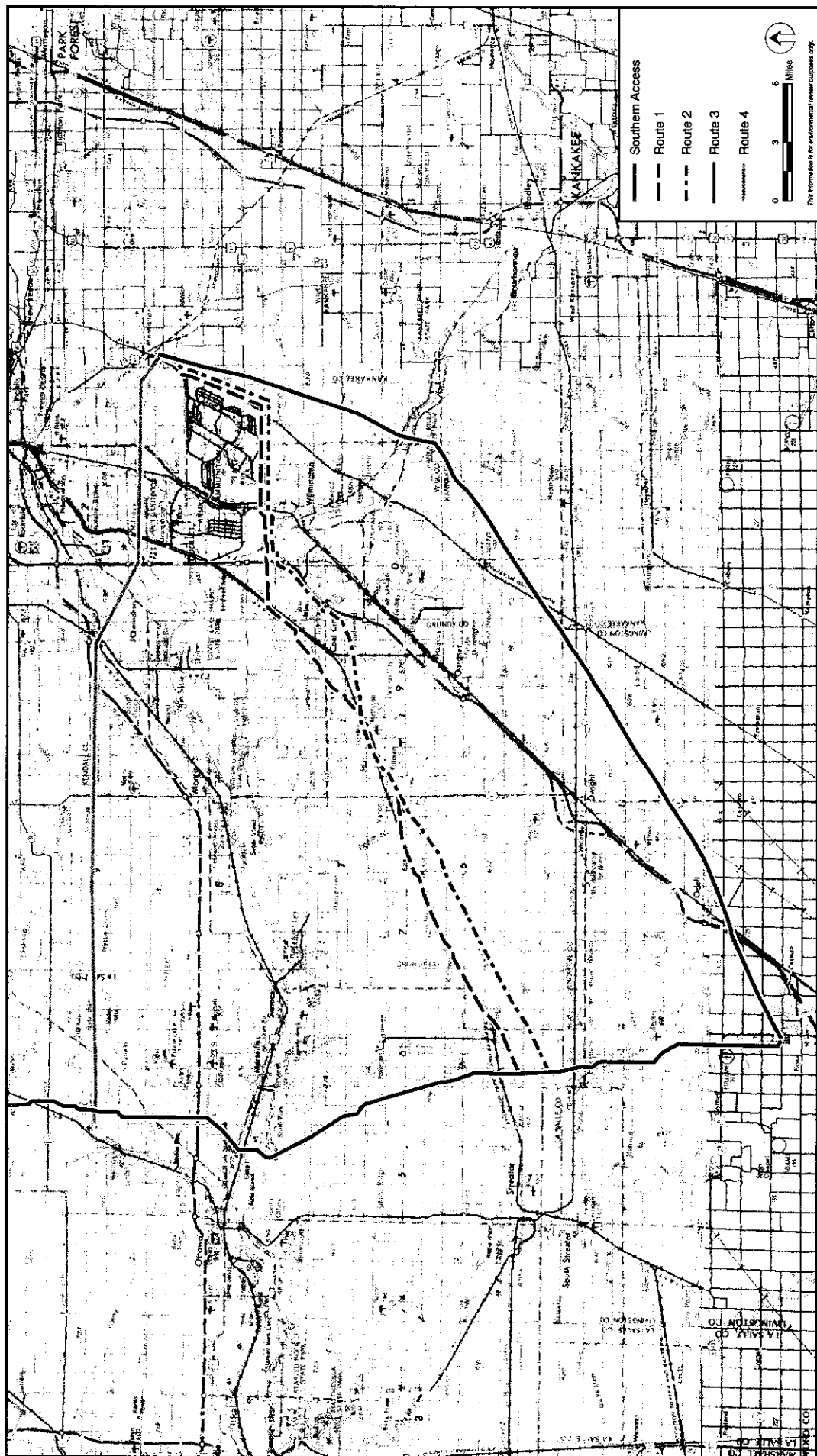
Table 1 (below) presents a summary of environmental features that were evaluated, and route characteristics for all four route alternatives.

As we move from the broad-scale criteria used during the high level assessment into a more refined routing evaluation we will explore the opportunities to minimize public impacts by identifying whether the prospect exists to share existing right-of-way easement with one of the above identified alternatives. The benefits realized by sharing existing easement may outweigh alternative benefits that might be associated with other corridor alternatives and elevate one of the identified routes as the "preferred" routing option.



**Table 1**  
**Environmental Route Evaluation**  
**Southern Lights Pipeline (Manhattan, IL to Southern Access Interconnect)**

Feature	Unit	Manhattan, IL to Southern Access Interconnect				Source
		Route 1	Route 2	Route 3	Route 4	
Total Length	miles	44.14	44.70	49.90	39.00	USGS Land Use
Counties Crossed	number	3	3	4	3	ESRI
Collocated with Existing ROW	miles / %	44.14 / 100%	44.70 / 100%	49.90 / 100%	37.32 / 95.7%	USGS Topographic Maps 1:24,000
Federal Lands Crossed	number/ length (mi.)	4 / 4.45	4 / 4.45	0 / 0	1 / 2.91	ESRI
State Lands Crossed	number/ length (ft)	0 / 0	0 / 0	0 / 0	0 / 0	ESRI
Road Crossings	number	79	66	75	68	ESRI
Perennial Waterbody Crossings	number	12	9	20	12	ESRI
Wetland Crossings	number/ length (ft)	22 / 4,920	6 / 1,169	13 / 3,524	22 / 6,858	NWI
Residential Land Crossed	miles	0.64	0.13	0.0	0.86	USGS Land Use
Shallow Bedrock	feet	0	0	5.18	1.83	STATSGO
Forested Land	miles	2.82	2.95	1.65	3.47	USGS Land Use
Agricultural Land	miles	38.70	40.84	47.62	32.58	USGS Land Use
Prime Farmland	miles	37.05	36.93	40.75	30.91	STATSGO



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**Figure 1**  
**Southern Lights Project**  
**Proposed Routes in Illinois**

**ENBRIDGE**